

TOSHIBA Transistor Silicon-Germanium Npn Epitaxial Planer Type

MT3S107FS

VCO Buffer Stage

VHF-SHF Low Noise Amplifier Application

Features

- Low Noise Figure :NF=0.85dB (@f=2GHz)
- High Gain:|S21e|^2= 13dB (@f=2GHz)

Marking



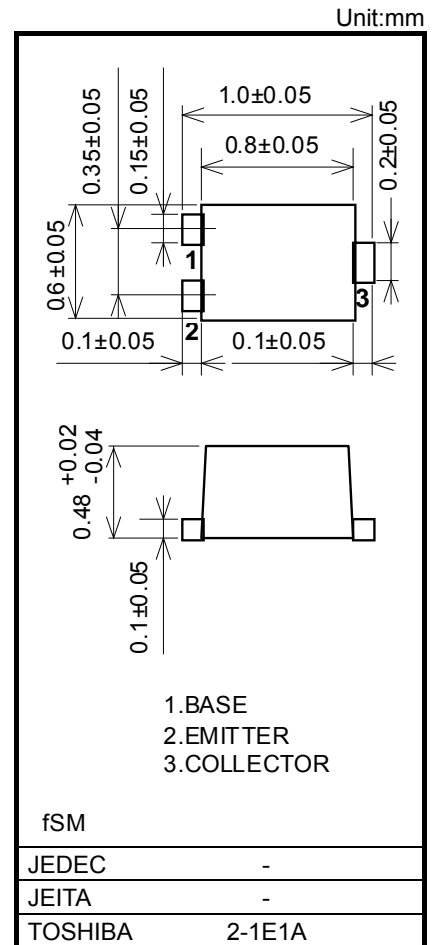
Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-Base voltage	V _{CBO}	10	V
Collector-Emitter voltage	V _{CEO}	4.5	V
Emitter-Base voltage	V _{EBO}	1.5	V
Collector-Current	I _C	20	mA
Base-Current	I _B	10	mA
Collector Power dissipation	P _C (Note 1)	100	mW
Junction temperature	T _j	150	°C
Storage temperature Range	T _{stg}	-55~150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Device mounted on a glass-epoxy PCB(1.0 cm² x 1.0 mm (t))



Weight: 0.0006 g (typ.)

Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition Frequency	fT	V _{CE} =1V, I _C =10mA	14	16.5	-	GHz
Insertion Gain	S _{21e} ² (1)	V _{CE} =1V, I _C =5mA, f=2GHz	-	11.5	-	dB
	S _{21e} ² (2)	V _{CE} =3V, I _C =10mA, f=2GHz	11	13	-	dB
Noise Figure	NF	V _{CE} =1V, I _C =5mA, f=2GHz	-	0.85	1.5	dB

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector Cut-off Current	I _{CBO}	V _{CB} =5V, I _E =0	-	-	0.1	μA
Emitter Cut-off Current	I _{EBO}	V _{EB} =1V, I _C =0	-	-	0.5	μA
DC Current Gain	hFE	V _{CE} =1V, I _C =5mA	100	-	150	-
Reverse Transistor Capacitance	C _{re}	V _{CB} =1V, I _E =0, f=1MHz (Note 1)	-	0.2	0.35	pF

Note 1: C_{re} is measured by 3 terminal method with capacitance Bridge.

Caution:

This device is sensitive to electrostatic discharge due to applied the high frequency transistor process of fT=60GHz class is used for this product.

Please make enough tool and equipment earthed when you handle.

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